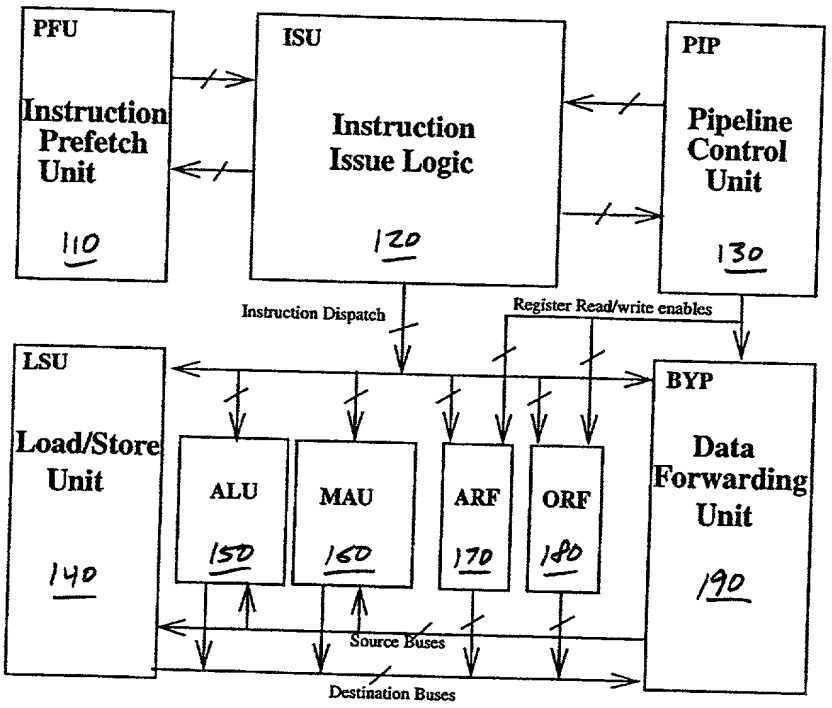


ALU: Arithmetic & Logic Unit
MAU: Multiply-accumulate & Arithmetic Unit
ARF: Address Register File
ORF: Operand Register File

FIGURE 1

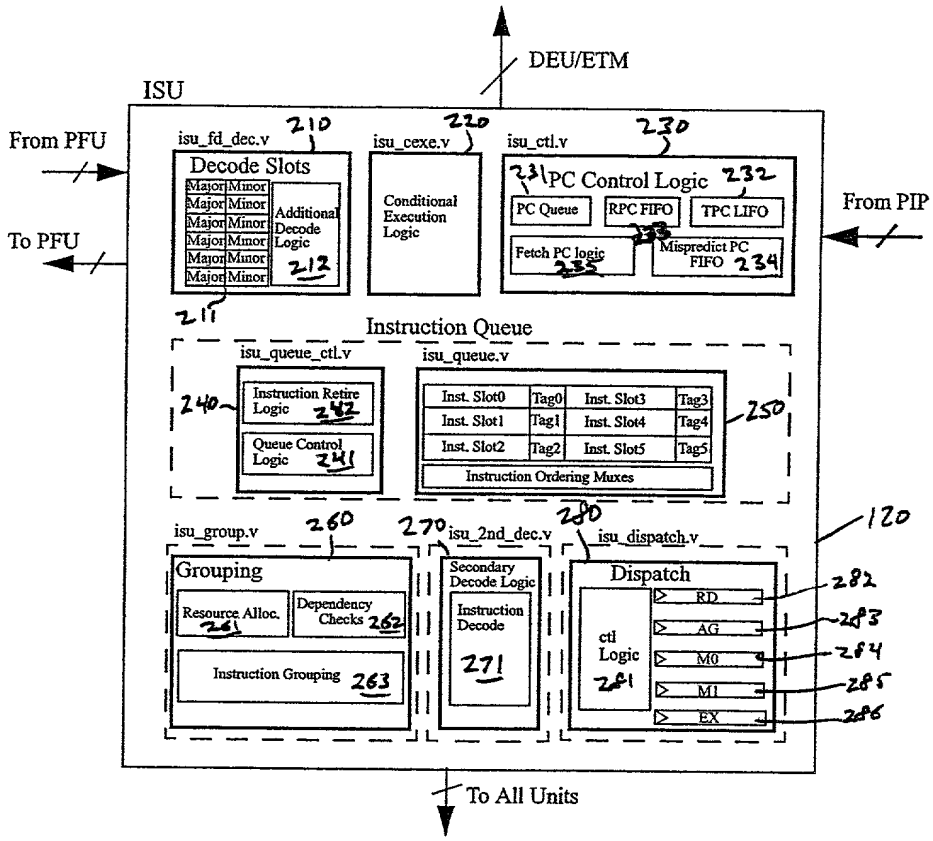
DEU/ETM
ISU
From PFU
To PFU
From PIP
isu_fd_dec.v
210
Decode Slots
Major Minor
Major Minor
Major Minor
Major Minor
Major Minor
Additional Decode Logic
212
211
isu_cexe.v
220
Conditional Execution Logic
isu_ctl.v
230
PC Control Logic
232
231
PC Queue
RPC FIFO
TPC LIFO
Fetch PC logic
235
233
Mispredict PC FIFO
234
Instruction Queue
isu_queue_ctl.v
240
Instruction Retire Logic
242
Queue Control Logic
241
isu_queue.v
Inst. Slot0
Tag0
Inst. Slot3
Tag3
Inst. Slot1
Tag1
Inst. Slot4
Tag4
Inst. Slot2
Tag2
Inst. Slot5
Tag5
250
Instruction Ordering Muxes
120
isu_group.v
260
Grouping
Resource Alloc.
261
Dependency Checks
262
Instruction Grouping
263
270
isu_2nd_dec.v
Secondary Decode Logic
Instruction Decode
271
280
isu_dispatch.v
Dispatch
ctl Logic
281
RD
AG
M0
M1
EX
282
283
284
285
286
To All Units

FIGURE 2

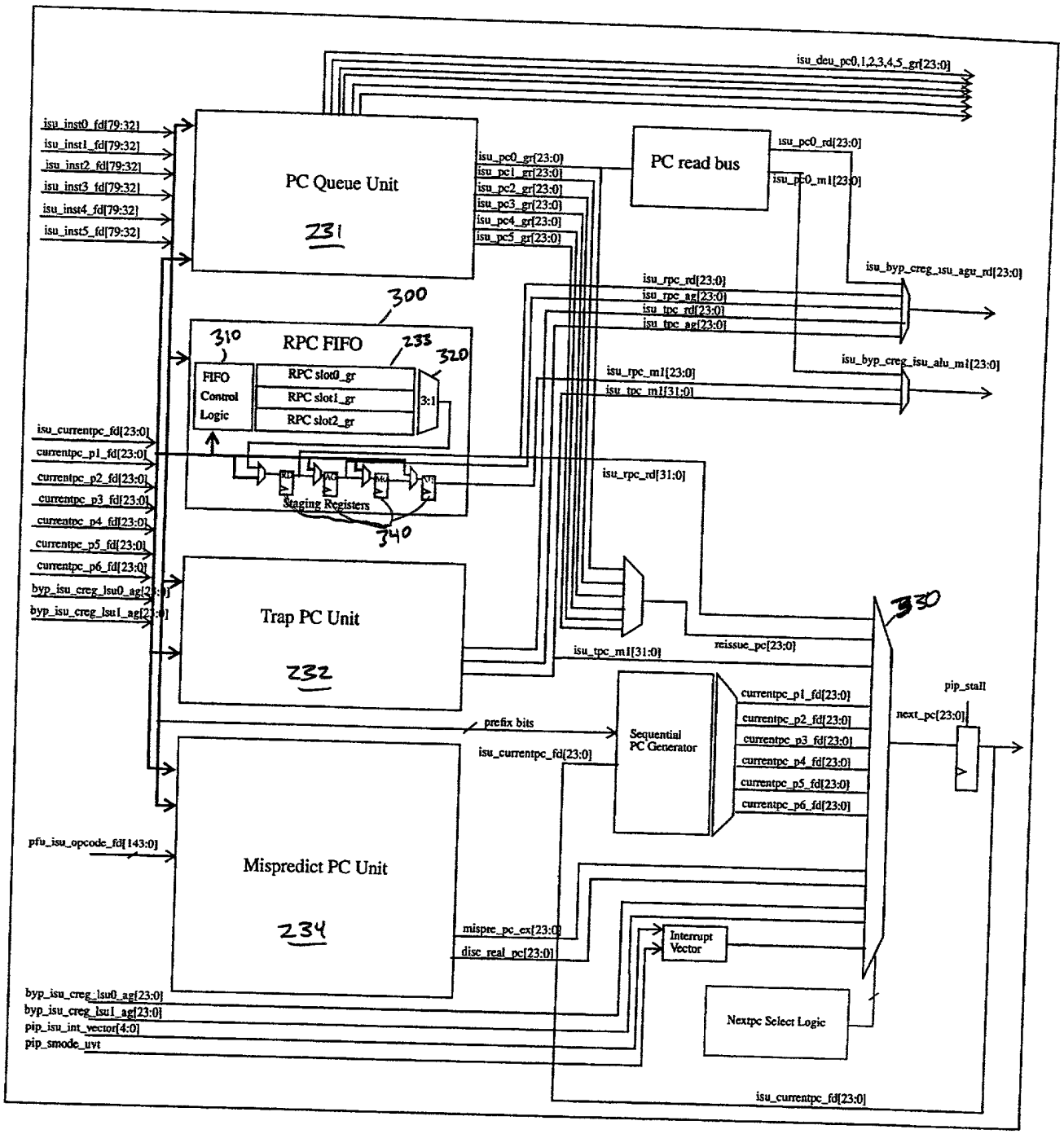
isu_deu_pc0,1,2,3,4,5_gr[23:0]
isu_inst0_fd[79:32]
isu_inst1_fd[79:32]
isu_inst2_fd[79:32]
isu_inst3_fd[79:32]
isu_inst4_fd[79:32]
isu_inst5_fd[79:32]
PC Queue Unit
231
isu_pc0_gr[23:0]
isu_pc1_gr[23:0]
isu_pc2_gr[23:0]
isu_pc3_gr[23:0]
isu_pc4_gr[23:0]
isu_pc5_gr[23:0]
PC read bus
isu_pc0_rd[23:0]
isu_pc0_m1[23:0]
isu_byp_creg_isu_agu_rd[23:0]
isu_rpc_rd[23:0]
isu_rpc_ag[23:0]
isu_tpc_rd[23:0]
isu_tpc_ag[23:0]
isu_byp_creg_isu_alu_m1[23:0]
isu_rpc_m1[23:0]
isu_tpc_m1[31:0]
300
310
RPC FIFO
233
320
FIFO Control Logic
RPC slot0_gr
RPC slot1_gr
RPC slot2_gr
3:1
Staging Registers
340
isu_currentpc_fd[23:0]
currentpc_p1_fd[23:0]
currentpc_p2_fd[23:0]
currentpc_p3_fd[23:0]
currentpc_p4_fd[23:0]
currentpc_p5_fd[23:0]
currentpc_p6_fd[23:0]
byp_isu_creg_lsu0_ag[23:0]
byp_isu_creg_lsu1_ag[23:0]
isu_rpc_rd[31:0]
Trap PC Unit
232
isu_tpc_m1[31:0]
reissue_pc[23:0]
330
pip_stall
next_pc[23:0]
prefix bits
isu_currentpc_fd[23:0]
Sequential PC Generator
currentpc_p1_fd[23:0]
currentpc_p2_fd[23:0]
currentpc_p3_fd[23:0]
currentpc_p4_fd[23:0]
currentpc_p5_fd[23:0]
currentpc_p6_fd[23:0]
pfu_isu_opcode_fd[143:0]
Mispredict PC Unit
234
mispre_pc_ex[23:0]
disc_real_pc[23:0]
Interrupt Vector
Nextpc Select Logic
byp_isu_creg_lsu0_ag[23:0]
byp_isu_creg_lsu1_ag[23:0]
pip_isu_int_vector[4:0]
pip_smode_uvt
isu_currentpc_fd[23:0]

FIGURE 3

FAGLE-J-13500.C

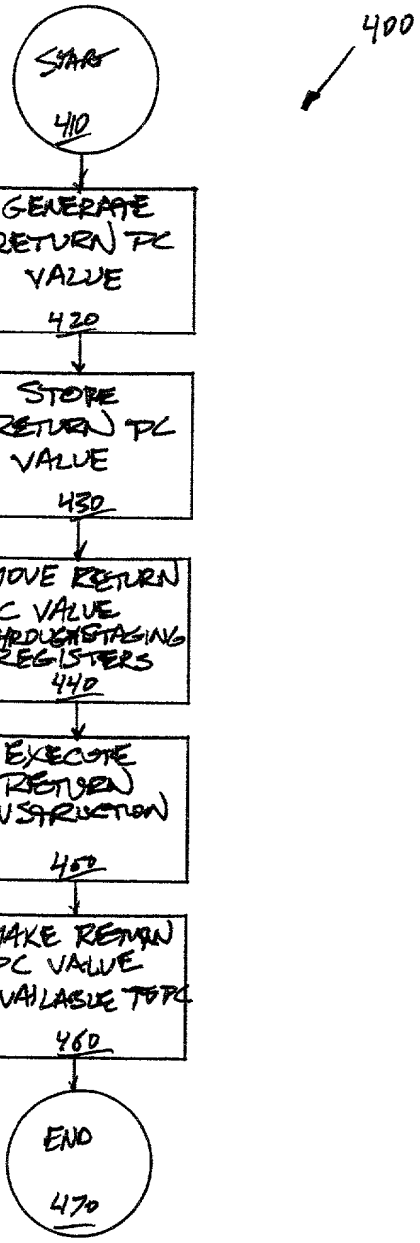


FIGURE 4